

Amendments to the Claims

This listing of claims replaces all prior listings of claims in the application.

Listing of Claims:

15. (currently amended) A protein comprising two joined heterologous domains:
- a sequence non-specific double-stranded nucleic acid binding domain that comprises an amino acid sequence that has at least ~~75%~~ 85% sequence identity to SEQ ID NO:2; and
 - a DNA polymerase domain
- wherein the presence of the sequence non-specific double-stranded nucleic acid binding domain enhances the processivity of the polymerase domain compared to an identical protein that does not have the sequence non-specific double-stranded nucleic acid binding domain joined thereto.
17. (previously presented) The protein of claim 15, wherein the sequence non-specific double-stranded nucleic acid binding domain and the DNA polymerase domain are covalently linked.
- 18.-21. (cancelled).
22. (previously presented) The protein of claim 15, wherein the DNA polymerase domain has thermally stable polymerase activity.
23. (previously presented) The protein of claim 15, wherein the DNA polymerase domain comprises a family A polymerase domain.

24. (previously presented) The protein of claim 23, wherein the family A polymerase domain is a *Thermus* polymerase domain.

25. (previously presented) The protein of claim 23, wherein the family A polymerase domain polymerase domain is a *Taq* polymerase domain.

26. (previously presented) The protein of claim 22, wherein the DNA polymerase domain is a Δ *Taq* domain.

27. (previously presented) The protein of claim 15, wherein the polymerase domain is a family B polymerase domain.

28. (previously presented) The protein of claim 27, wherein the family B polymerase domain is a *Pyrococcus* DNA polymerase I domain.

29. (previously presented) The protein of claim 28, wherein the *Pyrococcus* polymerase domain is a *Pyrococcus furiosus* domain.

30. (currently amended) A protein comprising two joined heterologous domains:

a sequence non-specific double-stranded nucleic acid binding domain that comprises an amino acid sequence that has at least ~~75%~~ 85% sequence identity to the Sac7d sequence set forth in amino acids 7-71 of SEQ ID NO:10; and

a DNA polymerase domain,

wherein the presence of the sequence non-specific double-stranded nucleic acid binding domain enhances the processivity of the polymerase domain compared to an identical protein that does not have the sequence non-specific double-stranded nucleic acid binding domain joined thereto.

31. (cancelled)

32. (previously presented) The protein of claim 30, wherein the sequence non-specific double-stranded nucleic acid binding domain and the DNA polymerase domain are covalently linked.

33. (cancelled)

34. (previously presented) The protein of claim 30, wherein the sequence non-specific double-stranded nucleic acid binding domain comprises an amino acid sequence that has at least 90% sequence identity to the Sac 7d sequence set forth in SEQ ID NO:10.

35. (previously presented) The protein of claim 30, wherein the DNA polymerase domain has thermally stable polymerase activity.

36. (previously presented) The protein of claim 30, wherein the DNA polymerase domain comprises a family A polymerase domain.

37. (previously presented) The protein of claim 35, wherein the DNA polymerase domain is a *Thermus* polymerase domain.

38. (previously presented) The protein of claim 36, wherein the *Thermus* polymerase domain polymerase domain is a *Taq* polymerase domain.

39. (previously presented) The protein of claim 35, wherein the DNA polymerase domain is a Δ *Taq* domain.

40. (previously presented) The protein of claim 30, wherein the polymerase domain is a family B polymerase domain.

41. (previously presented) The protein of claim 40, wherein the family B polymerase domain is a *Pyrococcus* DNA polymerase I domain.

42. (previously presented) The protein of claim 41, wherein the *Pyrococcus* polymerase domain is a *Pyrococcus furiosus* domain.